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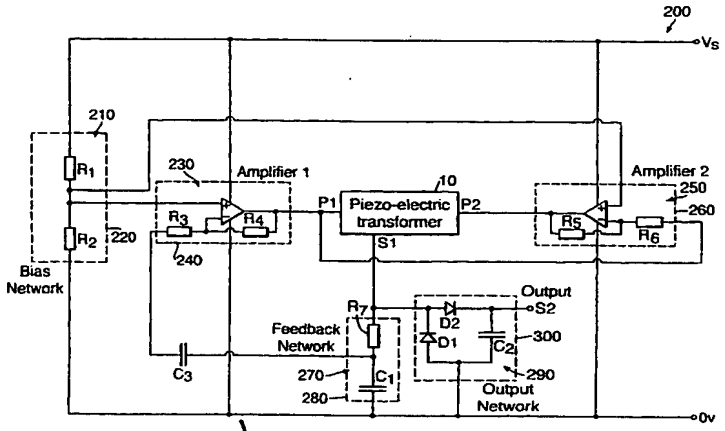
(54) Title: PIEZO-ELECTRIC TRANSFORMER CIRCUIT



(57) Abstract: The invention relates to a piezo-electric transformer circuit (200) incorporating a piezo-electric transformer (10) comprising a multi-element primary region (12) and a single element secondary region (14) mutually joined together. In operation, the circuit (200) applies a drive signal to the primary region (12) to excite the primary and secondary regions (12, 14) into longitudinal resonance, thereby generating a high potential signal at the secondary region (14). The drive signal is derived from the signal at the secondary region (14) in a self oscillating feedback loop configuration. The transformer (10) is fabricated from a hard piezo-electric ceramic material having a dielectric loss of substantially 0.005 or less at 1 kHz. Although such a hard ceramic does not provide as high a charge coefficient as softer piezo-electric ceramic materials, it is found that hard ceramics provide surprisingly improved energy conversion when used in piezo-electric transformer power supplies.

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